Cal/Ecotox
Toxicity Data for Peregrine Falcon (Falco peregrinus)*

Chemical	Tox Exposure	Endpoint Type	Endpoint Description	Endpoint Value	Note	Reference
AROCLOR 1248; AROCLOR 1254; AROCLOR 1260; DDE (4,4'-); DDT (4,4'-); MERCURY COMPOUNDS	mean concentrations in 7 eggs, ppm, wet wt: 3.61 (DDE); 0.026 (DDT); 5.71 (Aroclor 1260); 0.446 (Aroclor 1248); 0.16 (Aroclor 1254); 0.163 (Hg)	TOX-REPRO - physiology	eggshell thickness compared to pre-1947 reference eggs	no effect	a	1
DDD (4,4'-); DDE (4,4'-); DDT (4,4'-)	NR	TOX-REPRO - physiology	concentrations of chemicals in eggs and diet associated with mortality and eggshell thinning (various raptor species)	review	b	2
DDD (4,4'-); DDE (4,4'-); DDT (4,4'-); DIELDRIN	range of mean concentrations in prey items, ppm dry wt: 0.32-6.02 (DDE), 0.07-0.17 (DDD), 0.09-0.19 (DDT), 0.00-0.11 (dieldrin)	TOX-EXP IND - accumulation	mean concentrations of pesticides in eggs (ppm, dry weight)	48.0 (DDE), 3.35 (DDD), 1.02 (DDT), 1.45 (dieldrin)	c	3
DDD (4,4'-); DDE (4,4'-); DDT (4,4'-); DIELDRIN	range of mean concentrations in prey items, ppm dry wt: 0.32-6.02 (DDE), 0.07-0.17 (DDD), 0.09-0.19 (DDT), 0.00-0.11 (dieldrin)	TOX-EXP IND - accumulation	mean concentrations of pesticides in fat (ppm, dry weight)	622.0 (DDE), 25.4 (DDD), 25.3 (DDT), 6.20 (dieldrin)	d	3
DDD (4,4'-); DDE (4,4'-); DDT (4,4'-); DIELDRIN; HEPTACHLOR EPOXIDE	mean (+/- SE) concentrations in 11 prey samples, ppm, wet wt: 0.13 +/- 0.18 (DDT), 0.66 +/- 0.67 (DDE), 0.11 +/- 0.16 (DDD), 0.01 +/- 0.02 (dieldrin), 0.05 +/- 0.04 (heptachlor epoxide)	TOX-EXP IND - accumulation	mean residue concentrations in fat (ppm, wet wt)	37.3 (DDT), 284 (DDE), 39.5 (DDD), 3.3 (dieldrin), 4.4 (heptachlor epoxide)	e	4
DDD (4,4'-); DDE (4,4'-); DDT (4,4'-); DIELDRIN; HEPTACHLOR EPOXIDE	mean (+/- SE) concentrations in fat of nesting females, ppm, wet wt: 37.3 +/- 12.2 (DDT), 284 +/- 62 (DDE), 39.5 +/- 11.2 (DDD), 3.3 +/- 1.3 (dieldrin), 4.4 +/- 2.6 (heptachlor epoxide)	TOX-EXP IND - accumulation	range of concentrations in eggs (ppm, wet wt)	0.9-7.2 (DDT); 10.4-41.8 (DDE); 0.9-3.4 (DDD); 0.3-2.0 (dieldrin); 0.2-1.2 (heptachlor epoxide)	f	4
DDD (4,4'-); DDE (4,4'-); DDT (4,4'-); DIELDRIN; HEPTACHLOR EPOXIDE	mean residue concentrations in fat of nesting females (ppm, wet wt): 37.3 (DDT), 284 (DDE), 39.5 (DDD), 3.3 (dieldrin), 4.4 (heptachlor epoxide)	TOX-REPRO - reproductive success	number of viable eggs or young versus "normal" nest success	no effect	g	4
DDD (4,4'-); DDE (4,4'-); DDT (4,4'-); HEPTACHLOR EPOXIDE; OXYCHLORDANE; POLYCHLORINATED BIPHENYLS	range of concentrations in eggs, ppm, wet wt : 2.5-18 (DDT and metabolites); 0.06-0.47 (heptachlor epoxide); 0.16-0.82 (oxychlordane); 2.1-19 (PCBs)	TOX-REPRO - physiology	percent eggshell thinning (as indicated by Ratcliffe Index) compared to pre-1947 eggs	12.1%	h	5
DDE (4,4'-)	whole body residues in prey species, ppm, wet wt: 0.006-1.884	TOX-EXP IND - accumulation	annual mean (range) concentrations in eggs	1.89 (1.27-2.43) -6.96 (3.28-13.37) ppm, wet wt	i	6
DDE (4,4'-)	334 +/- 95 ppm in fat (mean +/-SE; lipid basis) of adult females	TOX-EXP IND - accumulation	mean (+/-SE) DDE concentration in eggs	12.7 +/- 8.7 ppm (wet wt), 253 +/- 160 ppm (lipid wt)	j	7
DDE (4,4'-)	0.01-8.78 ppm, wet wt, in composite prey samples	TOX-EXP IND - accumulation	range of concentrations in whole addled eggs	6.4-33 ppm, dry wt	k	8
DDE (4,4'-)	range of mean concentrations in prey species: 0.04-6.0 ppm, wet wt	TOX-EXP IND - accumulation	ratio of average concentration of DDE in eggs to average concentration of DDE in prey items	21:0.09	l	9
DDE (4,4'-)	NR	TOX-REPRO - physiology	data correlating eggshell thinning and DDE concentrations in eggs	review	m	10
DDE (4,4'-)	mean +/- SE concentrations, ppm: 253 +/- 160 (eggs); 334 +/- 95 (fat of adult females, lipid basis)	TOX-REPRO - physiology	eggshell thickness compared to pre-1940 museum specimens	21% decrease	n	7
DDE (4,4'-)	9.3-10.6 ppm DDE, wet wt, in eggs of tundrius and anatum ssp.	TOX-REPRO - physiology	eggshell thickness compared to pre-1947 reference eggs	13.1% and 13.6% decreases in tundrius and anatum ssp.	o	11
DDE (4,4'-)	NR	TOX-REPRO - physiology	eggshell thickness compared to that of pre-1945 eggs	review	p	12

Chemical	Tox Exposure	Endpoint Type	Endpoint Description	Endpoint Value	Note	Reference
DDE (4,4'-)	annual mean concentrations in eggs (range), ppm, wet wt: 1.89 (1.27-2.43) to 6.96 (3.28-13.37)	TOX-REPRO - physiology	eggshell thickness compared to "pre-pesticide" reference eggs	7.5% decrease	q	6
DDE (4,4'-)	mean concentration in eggs, ppm, lipid basis: 889 (tundra); 673 (taiga); 167 (Aleutian)	TOX-REPRO - physiology	eggshell thickness compared to pre-1947 reference eggs	21.7% decrease (tundra population); 16.8% decrease (taiga population); 7.5% decrease (Aleutian population)	r	13
DDE (4,4'-)	0.69-1.40 ppm, wet wt, in eggs	TOX-REPRO - physiology	eggshell thickness compared to pre-1947 reference eggs	no effect	s	14
DDE (4,4'-)	range of mean concentrations in eggs: 0.58-15.19 ppm, wet wt	TOX-REPRO - physiology	linear regression of eggshell thickness index vs. log DDE concentration in eggs	eggshell thickness index = 1.799 - 0.243(log DDE)	t	15
DDE (4,4'-)	1.8-12.4 ppm, wet wt, in eggs (range of geometric means)	TOX-REPRO - physiology	linear regression of eggshell thickness index and DDE content of eggs	eggshell thickness index = 1.888 - 0.281(log DDE)	u	16
DDE (4,4'-)	range of concentrations, ppm, wet wt: 2.30 to 82.00 (eggs); negligible to 0.74 (representative prey species)	TOX-REPRO - physiology	linear regression of eggshell thickness and DDE concentration in eggs	no relation	v	17
DDE (4,4'-)	25.0-39.8 ppm, dry wt, in eggs (range of annual means)	TOX-REPRO - physiology	percent eggshell thinning compared with pre-1946 reference eggs	7.4-8.3%	w	18
DDE (4,4'-)	105.6-344.3 ppm, dry wt, in eggs (range of annual means)	TOX-REPRO - physiology	percent eggshell thinning compared with pre-1946 reference eggs	16.8-24.9%	x	18
DDE (4,4'-)	0.01-8.78 ppm, wet wt, in composite prey samples	TOX-REPRO - physiology	percent eggshell thinning compared to pre-1947 reference eggs	14.2%	y	8
DDE (4,4'-)	3.98 ppm, wet wt, in eggs	TOX-REPRO - physiology	percent eggshell thinning compared to pre-1947 reference eggs	16%	z	19
DDE (4,4'-)	range of mean concentrations in eggs: 0.58-15.19 ppm, wet wt	TOX-REPRO - reproductive success	linear regression of productivity (mean number of young raised per pair) vs. log DDE concentration in eggs	productivity = 1.412 - 0.724(log DDE)	aa	15
DDE (4,4'-)	range of geometric means, ppm, wet wt: 2.0-6.1 (eggs); 0.06 - 1.78 (typical prey items)	TOX-REPRO - reproductive success	linear regression of productivity (number of young fledged per site) and DDE concentrations in eggs	productivity = 1.79 - 0.04(DDE)	ab	16
DDE (4,4'-); DIELDRIN; HEPTACHLOR EPOXIDE; POLYCHLORINATED BIPHENYLS	range of geometric mean concentrations in prey animals, ppm, wet wt: ND-4.22(DDE); ND-4.21 (PCBs); ND-0.19 (dieldrin); ND-1.73 (heptachlor epoxide)	TOX-EXP IND - accumulation	log-log relationship between DDE in plasma of female birds and DDE in eggs	log DDE in eggs = 0.9723 + 0.8506(log DDE in plasma); r = 0.66	ac	20
DDE (4,4'-); DIELDRIN; HEPTACHLOR EPOXIDE; POLYCHLORINATED BIPHENYLS	geometric mean concentration in 52 eggs, ppm, wet wt: 7.59 (DDE); 8.74 (PCBs); 0.41 (dieldrin); 0.36 (heptachlor epoxide)	TOX-REPRO - physiology	mean eggshell thinning compared to "pre-pesticide" reference eggs	15.8%	ad	20
DDE (4,4'-); DIELDRIN; POLYCHLORINATED BIPHENYLS	geometric mean residues in prey species, ppm, wet wt: non-detect. - 2.11(DDE); non-detect. - 6.88 (PCBs); 0 - 0.51 (dieldrin)	TOX-EXP IND - accumulation	geometric mean (range) residues in eggs, ppm, wet wt	8.31 (1.67-45.63; PCBs); 4.45 (0.76-28.05; DDE); 0.36 (0.05-1.80; dieldrin)	ae	21
DDE (4,4'-); DIELDRIN; POLYCHLORINATED BIPHENYLS	geometric mean residues in prey species, ppm, wet wt: non-detect. - 2.11(DDE); non-detect. - 6.88 (PCBs); 0 - 0.51 (dieldrin)	TOX-EXP IND - accumulation	geometric mean residues (range) in plasma, ppm, wet wt of nestlings	0.12 (0-2.59; PCBs); 0.06 (0-2.70; DDE); ND (0-0.06; dieldrin)	af	21
DDE (4,4'-); DIELDRIN; POLYCHLORINATED BIPHENYLS	geometric mean residues in prey species, ppm, wet wt: non-detect. - 2.11(DDE); non-detect. - 6.88 (PCBs); 0 - 0.51 (dieldrin)	TOX-EXP IND - accumulation	geometric mean residues (range) in plasma, ppm, wet wt of adult birds	males: 0.15 (0-3.27; PCBs); 0.31 (0.05-1.95; DDE); 0.03 (0-0.30; dieldrin) females: 0.87 (0-6.82; PCBs); 0.63 (0-4.23; DDE); 0.04 (0-0.37; dieldrin)	ag	21

Chemical	Tox Exposure	Endpoint Type	Endpoint Description	Endpoint Value	Note	Reference
DDE (4,4'-); DIELDRIN; POLYCHLORINATED BIPHENYLS	geometric mean residues in prey species, ppm, wet wt: non-detect. - 2.11(DDE); non-detect. - 6.88 (PCBs); 0 - 0.51 (dieldrin)	TOX-EXP IND - accumulation	range of residues in liver and breast muscle (ppm, wet wt) of 22-31 day old nestlings found dead	liver: 1.58-59.45, PCBs; 0.99-18.84, DDE; 0.06-0.79, dieldrin breast: 0.35-57.30, PCBs; 0.30-16.95, DDE; 0-0.19, dieldrin	ah	21
DDE (4,4'-); DIELDRIN; POLYCHLORINATED BIPHENYLS	geometric mean (range) residues in eggs, ppm, wet wt: 8.31 (1.67-45.63; PCBs); 4.45 (0.76-28.05; DDE); 0.36 (0.05-1.80; dieldrin)	TOX-REPRO - physiology	percent eggshell thinning compared with pre-DDT reference eggs	15%	ai	21
DDE (4,4'-); HEPTACHLOR EPOXIDE	range of mean concentrations in eggs, ppm, wet wt: 0.58-15.19 (DDE); 0.01 - 0.77 (heptachlor epoxide)	TOX-POP - size effects	concentrations in eggs associated with population recovery	15 ppm DDE, 0.7 ppm heptachlor epoxide	aj	15
DDE (4,4'-); MERCURY COMPOUNDS; POLYCHLORINATED BIPHENYLS	range of residues in 8 prey species, whole body or muscle, ppm wet wt: 0.44-7.45 (DDE); 0.02-1.67 (PCBs); 0.3-3.15 (Hg)	TOX-EXP IND - accumulation	residues in eggs (ppm, wet wt)	2.4-25.0 (DDE); 0.5-10.6 (PCBs); 0.2-4.2 (Hg)	ak	22
DDE (4,4'-); MERCURY COMPOUNDS; POLYCHLORINATED BIPHENYLS	range of residues in eggs, ppm, wet wt: 2.4-25.0 (DDE); 0.5-10.6 (PCBs); 0.2-4.2 (Hg)	TOX-REPRO - physiology	percent eggshell thinning compared to pre-1947 reference eggs	+2 to 16%	al	22
DDE (4,4'-); POLYCHLORINATED BIPHENYLS	geometric mean concentrations in eggs (n=37), ppm, wet wt: 7.8 (DDE) and 8.9 (PCBs)	TOX-REPRO - physiology	eggshell thickness compared to pre-1947 reference eggs	11% decrease	am	23
DDE (4,4'-); POLYCHLORINATED BIPHENYLS	geom. mean concentrations in eggs, ppm, wet wt: 3.5 (DDE), 7.3 (PCBs), wet wt, in eggs (geometric means)	TOX-REPRO - physiology	percent eggshell thinning compared to pre-DDT reference eggs	11.4%	an	24
DIELDRIN	NR	TOX-MORT - dose-response data	concentrations in brain associated with mortality (various raptor species)	review	ao	2
DIELDRIN	NR	TOX-MORT - mortality in the field	mortality in conjunction with pesticide use and residues in birds	review	ap	25
DIELDRIN	NR	TOX-REPRO - physiology	concentrations in eggs associated with reduced productivity (various raptor species)	review	aq	2
HEPTACHLOR EPOXIDE	NR	TOX-MORT - dose-response data	concentrations in brain associated with mortality (various raptor species)	review	ar	2
HEPTACHLOR EPOXIDE	0.10-1.10 ppm, wet wt, in eggs	TOX-REPRO - physiology	correlation of heptachlor epoxide concentration in eggs and eggshell thickness	negative correlation	as	9
HEPTACHLOR EPOXIDE	NR	TOX-REPRO - reproductive success	concentrations in eggs associated with reduced reproduction (various raptor species)	review	at	2
HEXACHLOROBENZENE	NR	TOX-REPRO - reproductive success	concentrations in eggs associated with reduced reproduction (various raptor species)	review	au	2
MERCURY (elemental)	< 0.1 to >0.4 ppm, wet wt, in pectoral muscles of avian prey species	TOX-EXP IND - accumulation	concentrations measured in primary and rectrix feathers	6.90-29.50 ppm, dry wt (females) 12.10 ppm, dry wt (males)	av	26
MERCURY (elemental)	< 0.1 to between 0.1 and 0.2 ppm, wet wt, in pectoral muscles of avian prey species	TOX-EXP IND - accumulation	mean (SD) concentration measured in feathers	2.79 (3.10) ppm, dry wt	aw	26
MERCURY (elemental)	< 0.1 to >0.4 ppm, wet wt, in pectoral muscles of avian prey species	TOX-EXP IND - accumulation	mean (SD) concentration measured in feathers	8.31(2.59) ppm, dry wt	ax	26
MERCURY (elemental)	< 0.1 to between 0.1 and 0.2 ppm, wet wt, in pectoral muscles of avian prey species	TOX-EXP IND - accumulation	range of concentrations measured in primary and rectrix feathers	2.80 - 10.60 ppm, dry wt (females) 3.70 - 8.95 ppm, dry wt (males)	ay	26
MERCURY (elemental)	range of geometric mean concentrations in eggs: 0.21-1.27 ppm, dry wt	TOX-REPRO - reproductive success	linear regression of brood size vs mercury and DDE concentrations in eggs	brood size = 0.848 - 0.635(log DDE) - 0.271(log Hg)	az	15

Chemical	Tox Exposure	Endpoint Type	Endpoint Description	Endpoint Value	Note	Reference
MERCURY COMPOUNDS	NR	TOX-MORT - dose-response data	concentrations in brain and liver associated with mortality (various avian species)	review	ba	2
MERCURY COMPOUNDS	NR	TOX-REPRO - reproductive success	concentrations in eggs associated with reduced reproduction (various avian species)	review	bb	2
OXYCHLORDANE	NR	TOX-MORT - dose-response data	concentrations in brain associated with mortality (various raptor species)	review	bc	2
POLYCHLORINATED BIPHENYLS	NR	TOX-MORT - dose-response data	concentrations in brain associated with mortality (various raptor species)	review	bd	2
POLYCHLORINATED BIPHENYLS	NR	TOX-REPRO - reproductive success	concentrations in eggs associated with reduced reproduction (various raptor species)	review	be	2

Notes

a Adult; WI; F; Species - California (R)=Falco peregrinus; TOX - Chemical=12672-29-6; TOX - Chemical=11097-69-1; TOX - Chemical=11096-82-5; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; TOX - Chemical=MERCURY COMPOUNDS; N=9 eggs; urban nest sites; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1991-1993; Tox Stat Sig=N

b Adult; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" level is 200 mg/kg brain (mortality), 15-20 mg/kg egg (eggshell thinning), 1 mg/kg diet.

c Adult; AK; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; TOX - Chemical=60-57-1; N=2 eggs; June-July; Yukon River; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=NR; See citation for residue data in other juvenal tissues: whole chicks, fat, muscle, liver, and brain. Concentration was highest in eggs, followed by fat, whole chicks, muscle, brain, and liver.

d Adult; AK; B; Species - California (R)=Falco peregrinus; TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; TOX - Chemical=60-57-1; N=4 birds; Condition=breeding; June-July; Yukon River; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=NR; See citation for residue data in other adult tissues: muscle, liver, and brain. Concentration was highest in fat, followed by muscle, brain, and liver.

e Adult; CANADA; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; TOX - Chemical=60-57-1; TOX - Chemical=1024-57-3; N=9 birds; Condition=nesting; Peace, Slave, and Mackenzie Rivers; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1 season; Tox Stat Sig=NR

f Adult; CANADA; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; TOX - Chemical=60-57-1; TOX - Chemical=1024-57-3; N=7 eggs; Peace, Slave, and Mackenzie Rivers; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1 season; Tox Stat Sig=NR

g Juvenile; CANADA; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; TOX - Chemical=60-57-1; TOX - Chemical=1024-57-3; N=15 nests; Peace, Slave, and Mackenzie Rivers; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1 season; Tox Stat Sig=NR; Average number of young produced per pair was 2.3. Data suggest that peregrines in northern Canada reproduced normally in spite of high organochlorine body burdens.

h Embryo; MD; NJ; PA; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; TOX - Chemical=1024-57-3; TOX - Chemical=27304-13-8; TOX - Chemical=1336-36-3; N=39 eggs; Mid-Atlantic coastal and urban breeding sites; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=3 years; Tox Stat Sig=Y; Significant negative correlations were observed between eggshell thickness and DDE, between eggshell thickness and DDT and metabolites, and between Ratcliffe Index and all contaminants measured.

i Adult; AK; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=3-6 eggs/year; Amchitka Island; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1969-1971; Tox Stat Sig=NR

j Adult; CANADA; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=10 eggs; Ungava region, Quebec; islands of Northwest Territories; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1 season; Tox Stat Sig=NR; Most eggs sampled were abandoned, addled, broken and/or cracked.

k Adult; AZ; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=5 eggs from 3 clutches; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=2 non-consecutive years; Tox Stat Sig=NR; See citation for concentrations of 8 other organochlorine compounds.

l Adult; CO; NM; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=12 prey species, pooled samples of 7-10 individuals; May, June; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=3 years; Tox Stat Sig=NR

m Adult; GLOBAL; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=NR; Tox Exp Tech=NR; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=NR; See figure 3 for plot of reviewed data.

n Adult; CANADA; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=21 eggs from 12 clutches; Ungava region, Quebec; islands of Northwest Territories; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1 season; Tox Stat Sig=NR

o Adult; AK; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=21 and 34 eggs for tundrius and anatum ssp.; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1979-1984; Tox Stat Sig=NR; Data were analyzed separately for 2 subspecies: F.p. tundrius, F.p. anatum. Eggs were also analyzed for dieldrin, heptachlor epoxide, oxychlordane, trans-nonachlor, and PCBs in addition to DDT and metabolites.

p Adult; GLOBAL; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=NR; Eggshell thicknesses are compared with DDE residues in eggs.

q Adult; AK; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=3-6 eggs/year; Amchitka Island; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1969-1971; Tox Stat Sig=Y

r Adult; AK; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=23 eggs (tundra pop.); 14 eggs (taiga pop.); 11 eggs (Aleutian pop.); Colville River (tundra); Yukon River (taiga); Amchitka Island (Aleutian); Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1967-1970; Tox Stat Sig=Y; Linear relationship between eggshell thickness and DDE concentrations in eggs is described by the equation: thickness = 2.15 - 0.316(DDE conc.); r = -0.745.

s Adult; ECUADOR; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=2 eggs, 1 nest; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1 season; Tox Stat Sig=NR; See citation for residue data on other organochlorine compounds.

t Adult; UNITED KINGDOM; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=295 eggs; Condition=eggs were addled and/or deserted; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=23 years; Tox Stat Sig=Y; Shell indexes of 10% and 20% below normal were associated with DDE levels of 4.6 and 25.9 ppm, wet wt. PCBs and heptachlor epoxide were not found to influence eggshell thinning.

u Adult; AUSTRALIA; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=137 eggs; Tasmania, Victoria, South Australia; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=approx. 1975-1991; Tox Stat Sig=Y; No relation observed between dieldrin levels and eggshell thinning.

v Adult; AUSTRALIA; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N= 35 eggs; Victoria; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1975-1977; Tox Stat Sig=N; Analysis was affected by small samples, and dessication of eggs.

w Adult; AK; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=3-7 eggs/year; Amchitka; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=4 years; Tox Stat Sig=Y; Negative correlation was observed between the eggshell thickness index and DDE residues in eggs.

x Adult; AK; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=3-11 eggs/year; Colville, Yukon, Tanana Rivers; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=6 years; Tox Stat Sig=Y; Negative correlation was observed between the eggshell thickness index and DDE residues in eggs. See citation for data on PCB residues in eggs, and DDE residues in young birds found dead near nests.

y Adult; AZ; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=26 breeding attempts; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=5 years; Tox Stat Sig=NR; No correlation was observed between productivity (mean number of fledglings/attempt was 2.1) and eggshell thinning.

z Adult; AUSTRALIA; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=13 eggs; South Australia; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1985-1988; Tox Stat Sig=NR; See citation for residue data on typical prey species (black duck, feral pigeon, silver gull). Residue data also shown for DDT, DDD, and dieldrin.

aa Adult; UNITED KINGDOM; B; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=14 pairs; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=23 years; Tox Stat Sig=Y; Productivity was reduced when concentrations in eggs exceeded 3 ppm, wet wt. PCBs and heptachlor epoxide were not found to influence productivity.

ab Adult; AUSTRALIA; B; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; N=9 eggs; Tasmania; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=approx. 1975-1991; Tox Stat Sig=Y; Nest site occupancy and productivity declined at about 5 ppm and 10-20 ppm, wet wt, in eggs. Dieldrin was not found to influence productivity or nest site occupancy.

ac Adult; NORTHWEST TERRITORIES; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=60-57-1; TOX - Chemical=1024-57-3; TOX - Chemical=1336-36-3; N=10 females; Rankin Inlet; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1981-1885; Tox Stat Sig=Y; Significant positive correlation was observed between log DDE in eggs and log DDE in plasma of females, and a negative correlation between log DDE in plasma of females and eggshell thickness.

ad Adult; NORTHWEST TERRITORIES; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=60-57-1; TOX - Chemical=1024-57-3; TOX - Chemical=1336-36-3; N=78 eggs; Rankin Inlet; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1981-1885; Tox Stat Sig=Y; Significant negative correlations were observed between eggshell thickness and DDE and PCB concentrations in eggs.

ae Adult; NORTHWEST TERRITORIES; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=60-57-1; TOX - Chemical=1336-36-3; N=20 eggs; Rankin Inlet; Tox Exp Tech=environmental contamination; diet; Tox Exp Dur=NR; Tox Study Dur=1991-1994; Tox Stat Sig=NR; See citation for other organochlorine residues in eggs.

af Juvenile; NORTHWEST TERRITORIES; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=60-57-1; TOX - Chemical=1336-36-3; N=79 nestlings; Rankin Inlet; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=1991-1994; Tox Stat Sig=NR; See citation for other organochlorine residues in plasma.

ag Adult; NORTHWEST TERRITORIES; B; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=60-57-1; TOX - Chemical=1336-36-3; N=26 males, 34 females; Rankin Inlet; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=1991-1994; Tox Stat Sig=NR; See citation for other organochlorine residues in plasma. Female adults had signficantly higher PCB and DDE residues than males.

ah Juvenile; NORTHWEST TERRITORIES; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=60-57-1; TOX - Chemical=1336-36-3; N=7 birds; Rankin Inlet; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=1991-1994; Tox Stat Sig=NR; See citation for other organochlorine residues in liver and breast muscle.

ai Adult; NORTHWEST TERRITORIES; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=60-57-1; TOX - Chemical=1336-36-3; N=20 eggs; Rankin Inlet; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1991-1994; Tox Stat Sig=NR

aj Both Adult and Juv.; UNITED KINGDOM; B; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=1024-57-3; N=550 eggs from 469 clutches; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=23 years; Tox Stat Sig=NR; These levels also corresponded to shell thickness indices of no more than 15-20% below normal and mean breeding success exceeding 0.6 young per pair.

ak Adult; MEXICO; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=MERCURY COMPOUNDS; TOX - Chemical=1336-36-3; N=5 eggs (from 5 nests); Gulf of California; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=1967-1984; Tox Stat Sig=NR

al Adult; MEXICO; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=MERCURY COMPOUNDS; TOX - Chemical=1336-36-3; N=5 eggs (from 5 nests); Gulf of California; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1967-1984; Tox Stat Sig=NR; DDE levels in eggs were below those thought to cause significant eggshell thinning. > 20% thinning was obsered in some eggs that were not analyzed for chemical residues.

am Adult; MD; NH; NJ; NY; VT; VA; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=1336-36-3; N=112 eggs; eastern U.S. coast; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1986-1988; Tox Stat Sig=Y; Significant negative correlation was found between DDE concentrations in eggs and eggshell thickness. No changes over the decade were found for DDE, PCB concentrations or eggshell thicknesses. All eggs used in the study were addled.

an Adult; RUSSIA; F; Species - California (R)=Falco peregrinus; TOX - Chemical=72-55-9; TOX - Chemical=1336-36-3; N=8 nests; Kola Peninsula; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1 season; Tox Stat Sig=NR; See citation for residue analyses for other organochlorines in eggs.

ao NR; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=60-57-1; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" level is >4 mg/kg brain (mortality).

ap Adult; CANADA; UNITED KINGDOM; USA; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=60-57-1; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=NR

aq NR; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=60-57-1; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" level is 1-4 mg/kg egg (reproductive effects).

ar NR; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=1024-57-3; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" level is >4 mg/kg brain (mortality).

as Adult; CO; NM; F; Species - California (R)=Falco peregrinus; TOX - Chemical=1024-57-3; N=38 eggs; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=4 years; Tox Stat Sig=Y; No inverse relationships between PCBs, DDT (or its metabolites), oxychlordane, hexachlorobenzene, or dieldrin and eggshell thickness were observed.

at NR; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=1024-57-3; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" level is >1.5 mg/kg egg.

au NR; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=118-74-1; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" level is >4 mg/kg egg.

av Adult; SWEDEN; B; Species - California (R)=Falco peregrinus; TOX - Chemical=7439-97-6; N=20 females, 1 male; Northern Sweden; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1971-1977; Tox Stat Sig=NR

aw Juvenile; SWEDEN; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=7439-97-6; N=3 nests; Southern Sweden; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1976-1978; Tox Stat Sig=NR

ax Juvenile; SWEDEN; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=7439-97-6; N=3 nests; Northern Sweden; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1976-1978; Tox Stat Sig=NR

ay Adult; SWEDEN; B; Species - California (R)=Falco peregrinus; TOX - Chemical=7439-97-6; N=3 sample periods; 1-9 birds/sample period; Southern Sweden; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1971-1977; Tox Stat Sig=NR

az Adult; UNITED KINGDOM; F; Species - California (R)=Falco peregrinus; TOX - Chemical=7439-97-6; N=60 eggs; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=approx 8 years; Tox Stat Sig=Y; This analysis did not necessarily implicate mercury in breeding failures.

ba NR; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=MERCURY COMPOUNDS; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" levels are >15 mg/kg brain, >20 mg/kg liver (mortality).

bb NR; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=MERCURY COMPOUNDS; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" level is >1 mg/kg egg.

bc NR; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=27304-13-8; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" level is >6 mg/kg brain (mortality).

bd NR; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=1336-36-3; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; Estimated "critical" level is >300 mg/kg brain (mortality).

be Adult; Lab; NR; Species - California (R)=Falco peregrinus; TOX - Chemical=1336-36-3; N=NR; Tox Exp Tech=environmental contamination; Tox Exp Dur=NR; Tox Study Dur=1965-1987 (data review); Tox Stat Sig=NR; No threshold identified; estimated "critical" level is >40 mg/kg egg.

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